

AN ENQUIRY INTO MORTALITY IN SOME MID-WHARFEDALE PARISHES IN 1623

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The year 1623 was marked by a severe mortality crisis in many parts of the north of England. Recently, **The Population History of England 1541-1871** has related local mortality crisis to national demographic trends and accepts the view that harvest failure was the underlying cause of the crises in the North in 1623.²

The following summaries, necessarily very brief, are given in order that the reader can make comparisons between the mid-Wharfedale figures and those produced for other areas. Probably the most important comparison is with Appleby's study of nine scattered Cumbrian parishes in which he presents convincing evidence of famine there in 1623.³ The histogram (fig. 1), made by combining his individual parishes, only covers five years but shows a very severe and sustained crisis in 1623 culminating in the three worst months of November and December 1623 and January 1624.

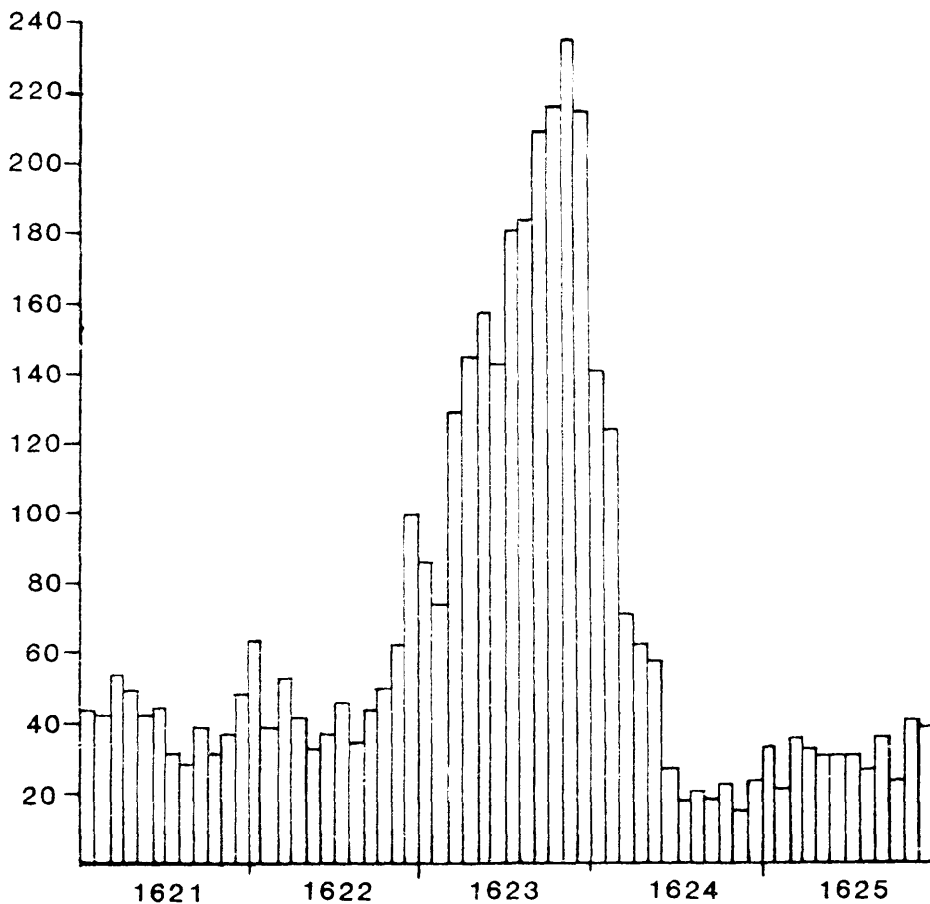


Fig. 1 : Composite histogram of monthly burials in Cumbria, 1621-5.

Millward's study of Stockport,⁴ a large Cheshire parish which contained fourteen townships, shows that here too there was a sustained mortality crisis (fig. 2) also at its worst in the autumn of 1623 though, as a visual comparison of the histograms shows, of a lesser magnitude than that in the Cumbrian parishes.

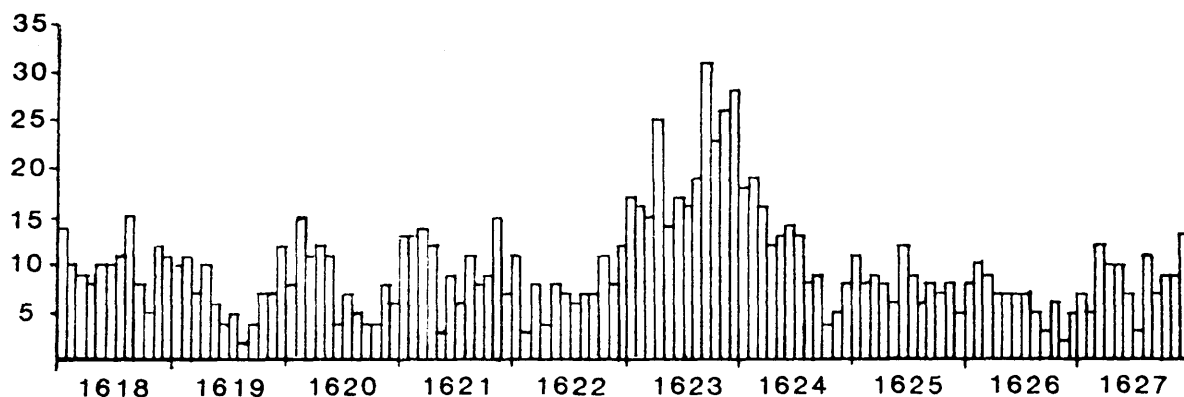


Fig. 2 : Monthly burials in Stockport, 1618-27.

All definitions of a mortality crisis are to some extent arbitrary but one frequently-used measure of a crisis year is that the number of burials is twice the average number of the decade in which the year lies. We have only five years' figures for Cumbria and the crisis year showed nearly two and a half times the five-year average. In Stockport burials rose to 247 in 1623 over a decadal average of 120.

The study of over eighty parishes in Lancashire by Rogers,⁵ based on the work of another adult education class, does not give monthly figures from which a comparative histogram could be made, but the yearly figures given show that over the same decade the average of burials was 3,270 per annum. In 1623 the total was 7,970, well over twice the average. This study used the Old Style of dating so that their 1623 corresponds to March 25 1623 to March 24 1624 in the other studies. Both Millward and Rogers place the greatest emphasis on the effects of famine and famine-related diseases.

Drake's West Yorkshire study also finds evidence of crisis mortality in 1623 though he gives greater weight to the effects of a serious depression in the wool trade at this time.⁶ His figures are of particular relevance to our study since they are geographically the closest to Wharfedale. We have been able to construct histograms for the large parishes of Halifax and Leeds (figs 3 and 4). These show that in these two parishes mortality, though substantially higher than usual, did not reach the 'twice average' crisis level over the whole year of 1623. There were however undoubted crisis months and these, as in Cumbria and Stockport, were concentrated in the autumn and winter of 1623-4.

The only other comparative material which we were able to use came from our own count of burials in the adjoining parishes of Skipton and Kildwick which lie just to the south of Wharfedale. Skipton did not suffer a true mortality crisis but had crisis months in August and October 1623 and February 1624. Kildwick did have a crisis year in 1623 with 150 burials (decadal average 70) and the mortality was highest in the autumn of 1623. These parishes, although geographically close, differ in character: Skipton was a market centre combined with a large rural parish while Kildwick is known to have been more dependent on the domestic textile industry.

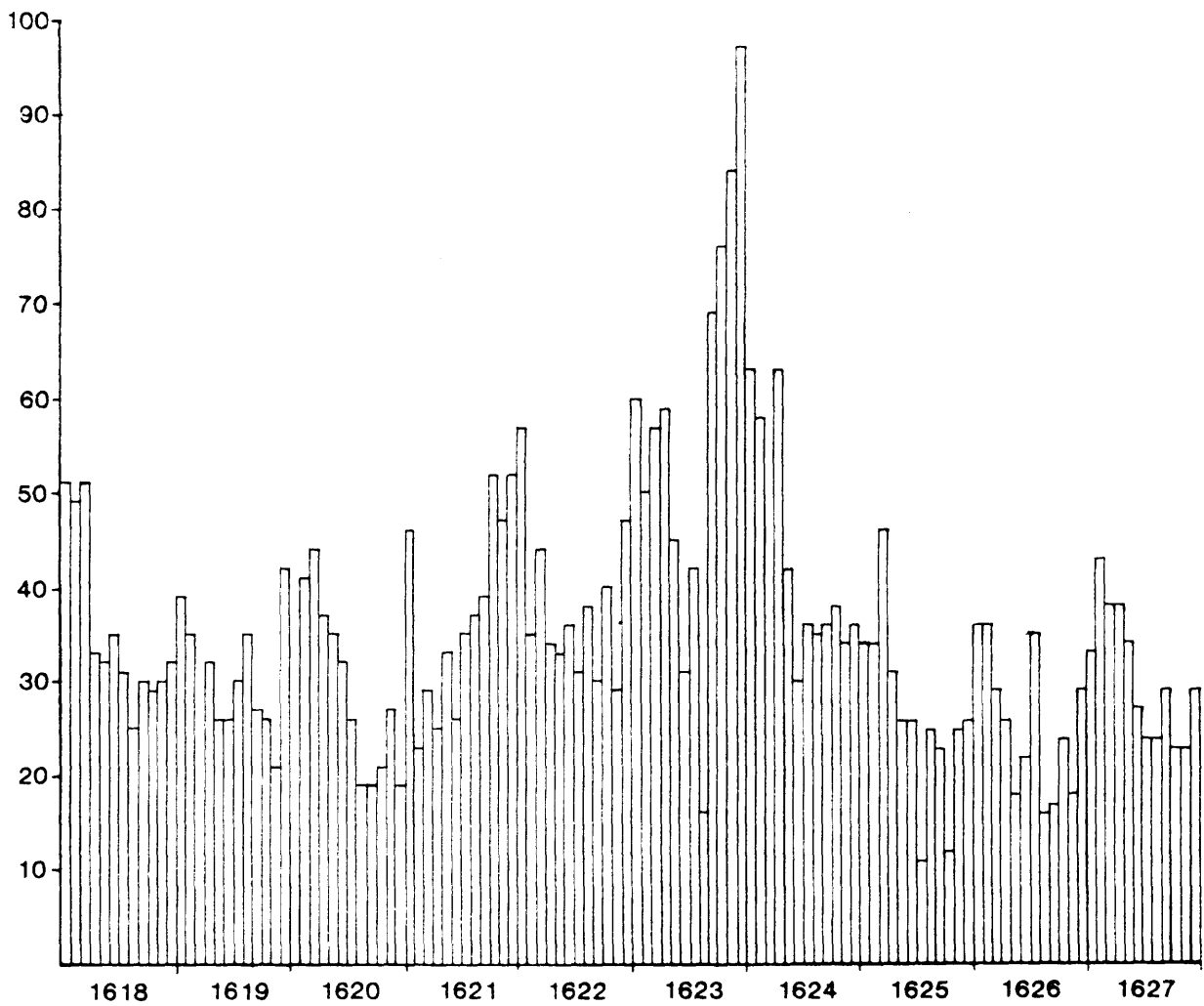


Fig. 3 : Monthly burials in Halifax, 1618-27.

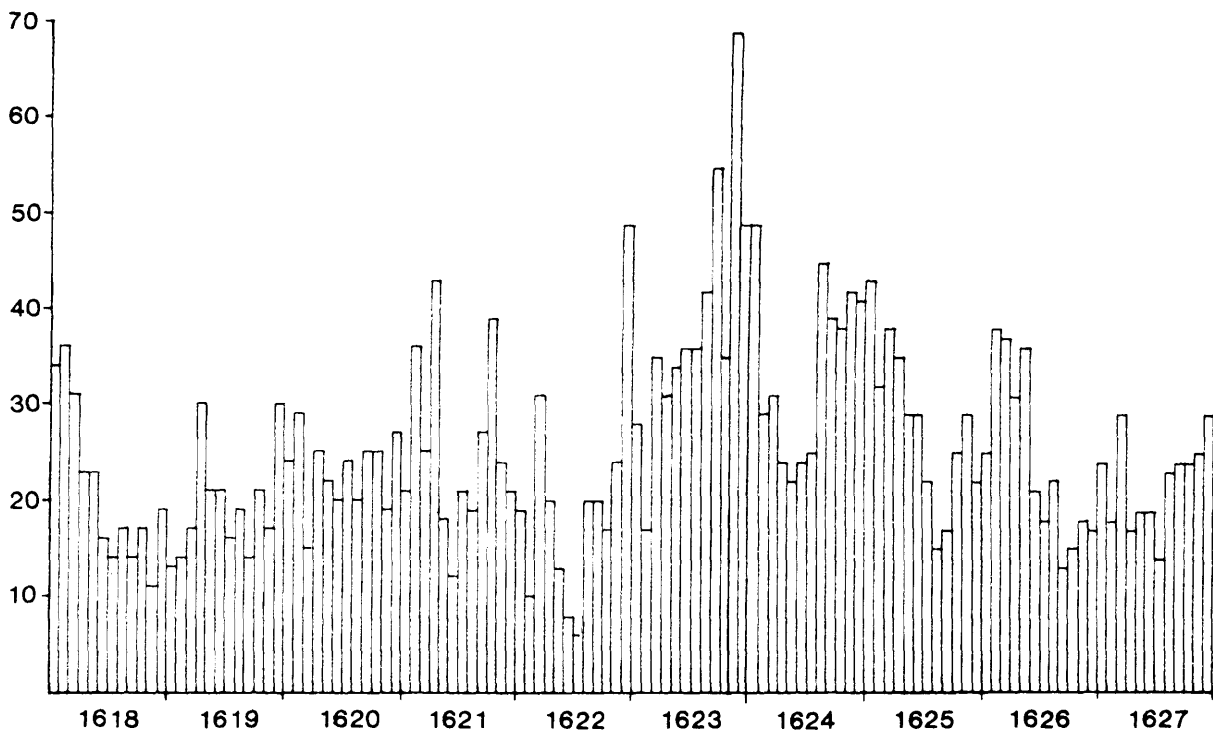


Fig. 4 : Monthly burials in Leeds, 1618-27.

Our detailed study of the mid-Wharfedale registers for 1613-32 is therefore to be seen against this background of high mortality in the north of England in 1623. We were concerned first of all to establish the demographic trends in this period for mid-Wharfedale, to find whether or not our area had experienced crisis mortality in 1623 and to see whether the monthly distribution of burials corresponded to that in other places or might give indications of the causes which lay behind the fluctuations.

We examined the parish registers to see how many of these could be used for this purpose. In the event only five registers gave adequate coverage.⁷ These were the registers of Otley parish, which consisted of the market town and eleven rural settlements, Ilkley parish which contained three main settlements, Middleton, Nesfield and Ilkley, Addingham parish and Burnsall parish including its detached chapelry of Conistone (fig. 5).⁸

These parishes lie in the old West Riding in mid-Wharfedale, which is a glaciated valley of varying width (fig. 12). Most parishes contain several townships with both nucleated and dispersed settlement. The villages tend to be small and many people lived in small hamlets or single farmsteads. The typical township forms a strip running from river to watershed with the meadowland lying in the valley bottom, the

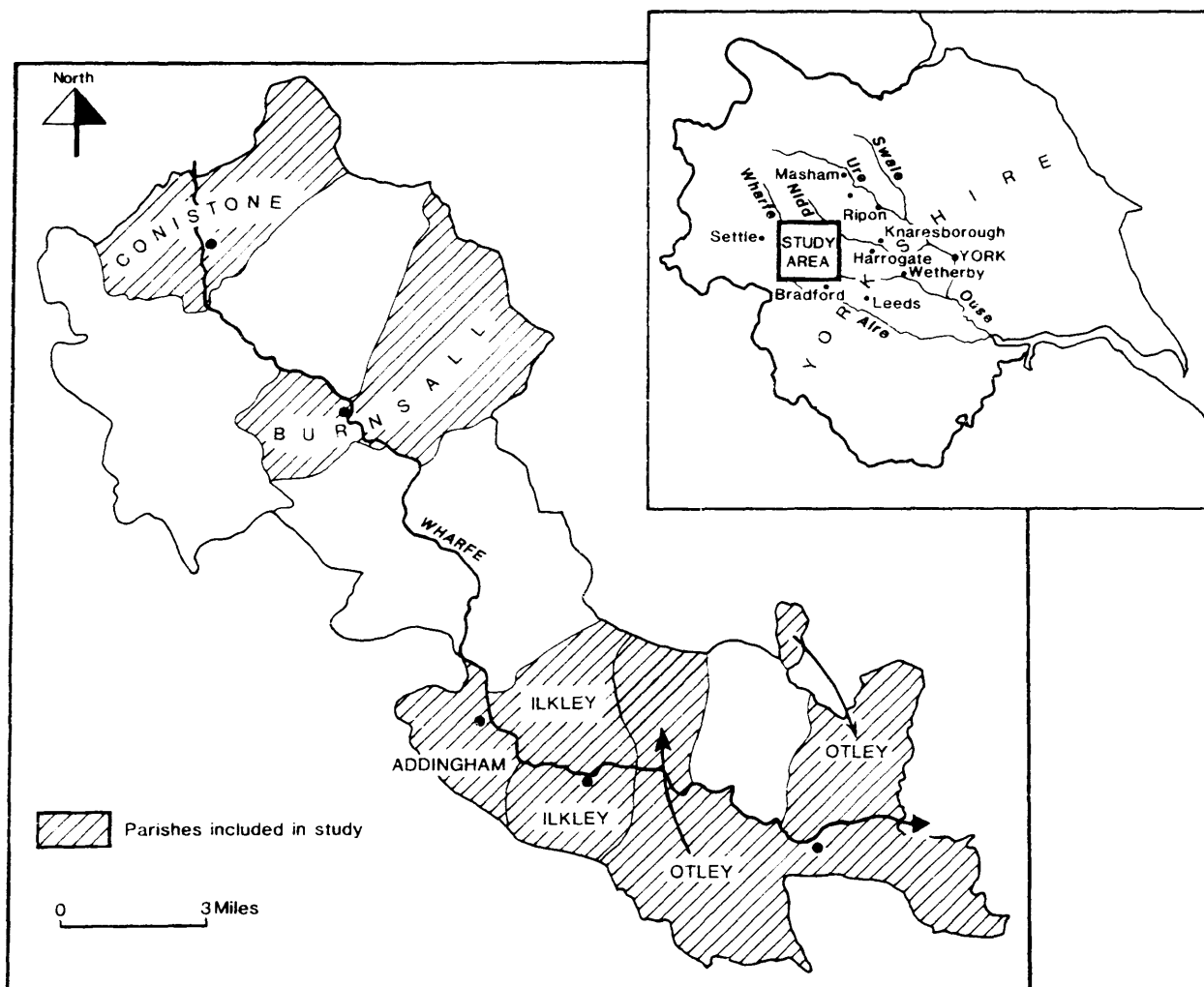


Fig. 5 : Map of mid-Wharfedale parishes.

villages and their medieval fields sited at about 400-600 feet OD with rough grazing to 800-900 feet and moorland rising above this to the boundary on the watershed with a township in the next valley. There are many streams running down to the Wharfe and these often form township boundaries. The annual rainfall varies between twenty-five inches east of Otley and sixty inches on the moors above Conistone; the growing season lasts 200 days on average.⁹ The underlying geology is carboniferous with limestones exposed in the upper dale and millstone grits and shales overlain with boulder clay round Addingham, Ilkley and Otley.

These conditions gave rise to an almost wholly agricultural economy. James Ryther's description of the dales farmers, written in 1589, was no doubt still valid in the 1620s. He wrote of 'a symple, plaine people, yet lyvinge without any great labor or riches for the more upon their mylke and sheep; their grayn they have growinge is otes only, of which they make both bred and drinke'. He also pointed out that the harvest ripens very late in the dales asserting that it could be as much as eight weeks later than in the plain of York.¹⁰

There was a small amount of coal and lead-mining in Wharfedale but these resources were not extensively exploited until the eighteenth century. There was also some small domestic textile industry as the wills testify but no statistics are available. Communications were apparently adequate not only along the valley sides but more importantly across the watersheds into neighbouring valleys, giving for example the inhabitants of Burnsall access both to the market at Skipton and to markets at Ripon and Kirkby Malzeard.

Demographic evidence

All the register entries for the years 1613-32 inclusive were counted and conventional graphs were made showing baptisms, burials and marriages for each parish. A cumulative graph for the region was then made (fig. 6).

The cumulative graph shows that overall the Wharfedale parishes did not experience a mortality crisis as previously defined. It is clear that there was, nevertheless, a very considerable increase in mortality here from September 1622 to February 1624. 1623 is the only calendar year in the twenty-year period in which burials exceeded baptisms in all four parishes and the graph clearly shows the abrupt reversal of the normal relationship of baptisms to burials. Thus Wharfedale did not escape the crisis of 1623 but the scale of the mortality here was not as great as in some of the other areas studied.

These studies also show that the number of baptisms fell very steeply, sometimes by more than 50 per cent, and this has been attributed to the effects of famine. Fig. 6 shows that in Wharfedale the level of baptisms only fell to a limited extent. Here again, it appears that Wharfedale, though not untouched, escaped the worst effects of the crisis of 1623.

Figure 6 shows the overall demographic trends but in order to consider the seasonality of the deaths and make direct comparisons with the other studies a histogram of monthly burials in Wharfedale was necessary (fig. 7). This shows clear-

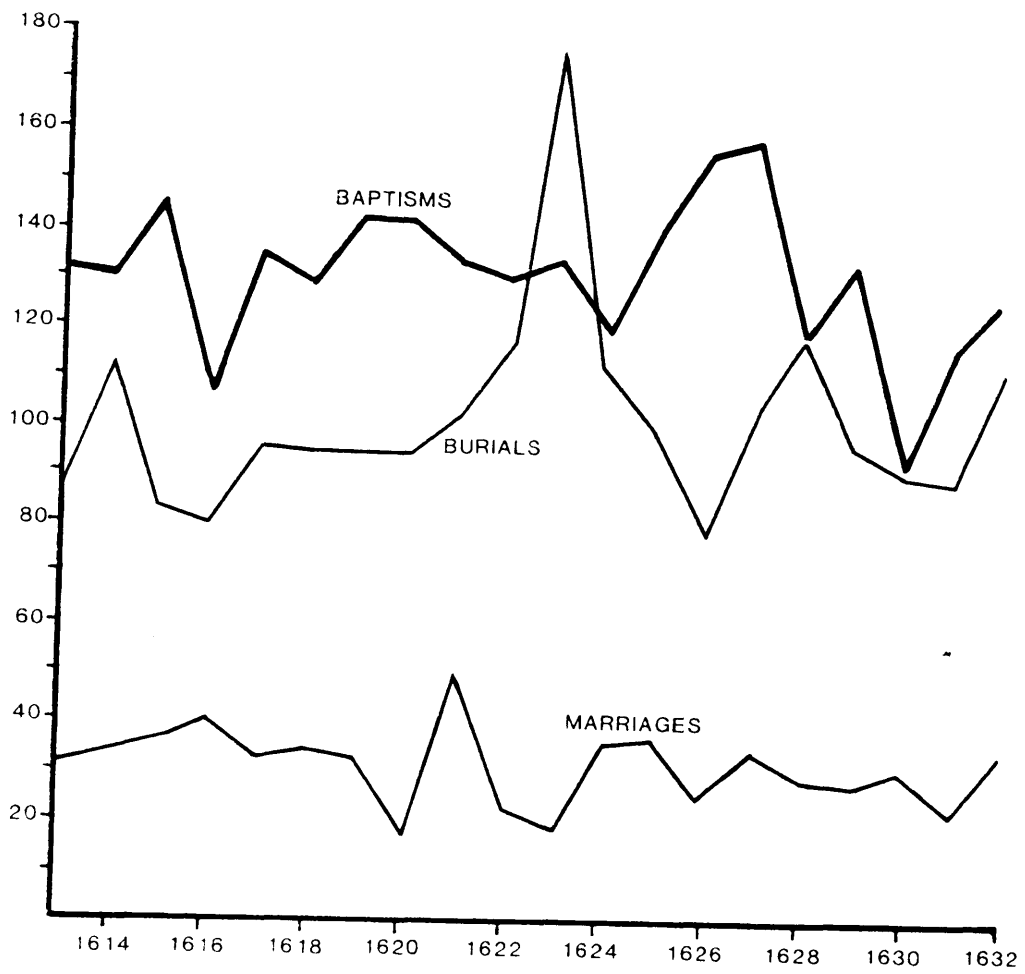


Fig. 6 : Baptisms, burials and marriages in combined Wharfedale parishes, 1613-32.

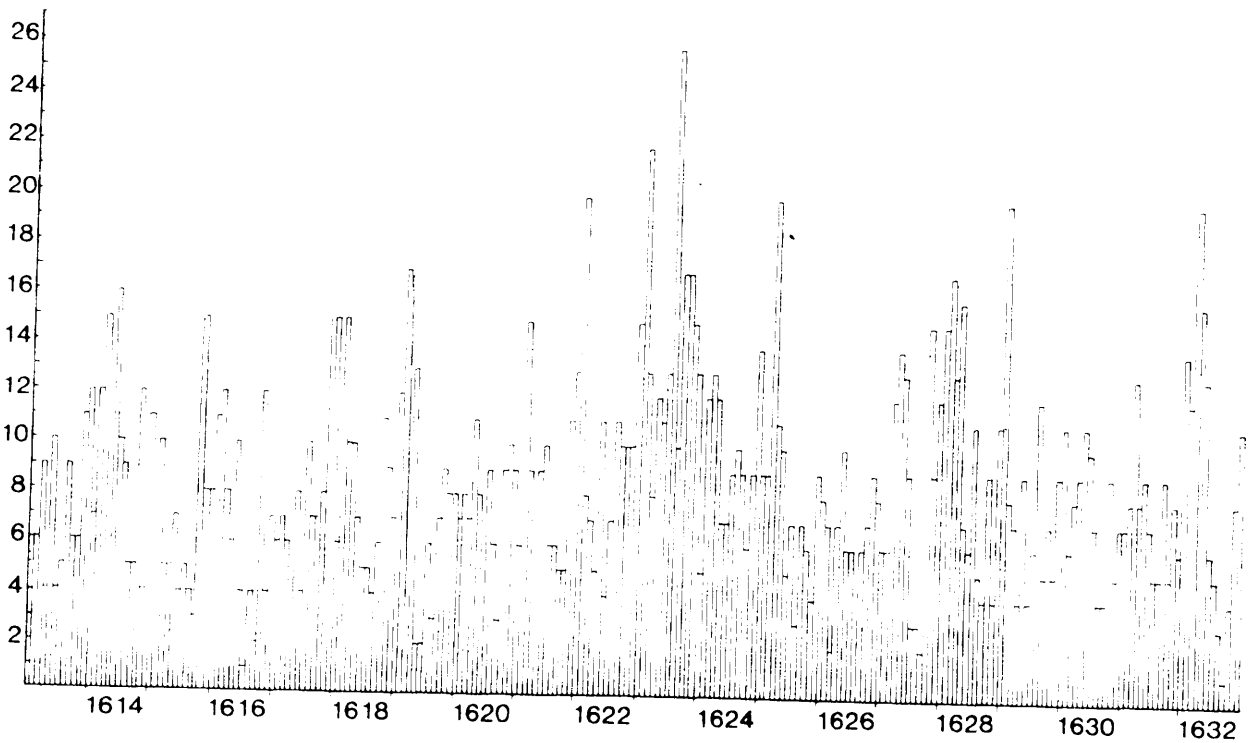


Fig. 7 : Monthly burials in combined Wharfedale parishes, 1613-32.

ly that although Wharfedale had increased mortality in 1623, with every month having above average deaths, there was nothing comparable to the sustained and cumulative rise in mortality seen in Cumbria (fig. 1) and also in Stockport (fig. 2). Our area has perhaps more in common with the Leeds and Halifax histograms, although these places too had their highest mortality in the autumn and winter months of 1623-4. By contrast, in Wharfedale, the months of highest mortality were in fact January 1623 and July 1623. Other parishes also had isolated crisis months but these were of secondary importance compared with crisis-level mortality of the autumn and winter of 1623-4. Rogers comments on raised mortality levels in Lancashire in the previous winter of 1622-3, which he calls a 'mini-crisis'. This may well be linked to the Wharfedale peak of January 1623.

A comparison of the individual parishes showed a wide variety of local experience. There was no pattern of crisis which was common to all our parishes. Some were more seriously affected than others and the seasonality of the deaths varied from place to place as is shown by the parish histograms of monthly burials (figs. 8-11).

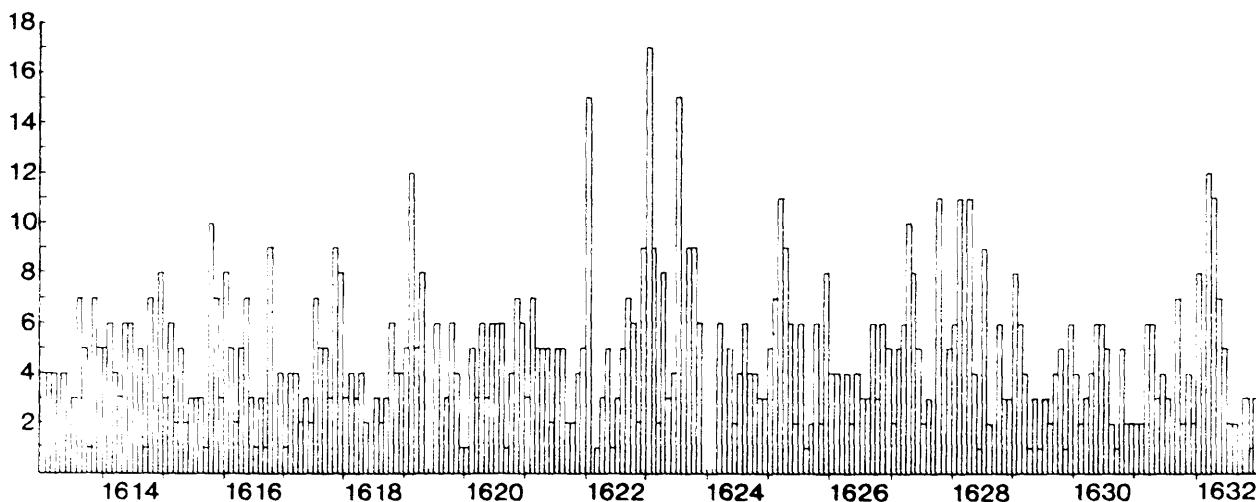


Fig. 8 : Monthly burials in Otley, 1613-32.

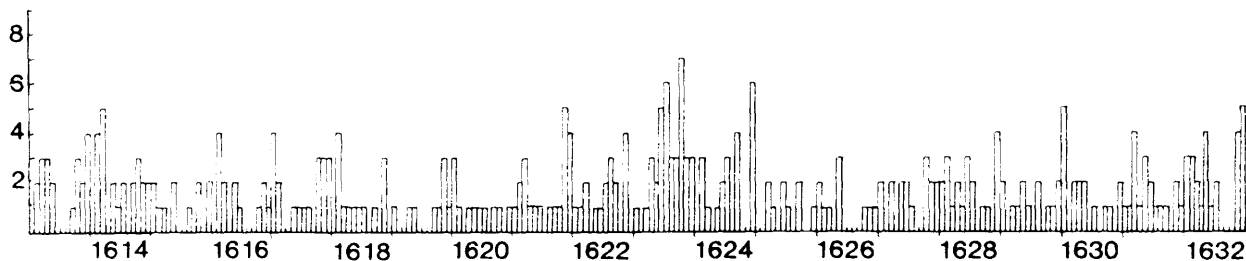


Fig. 9 : Monthly burials in Ilkley, 1613-32.

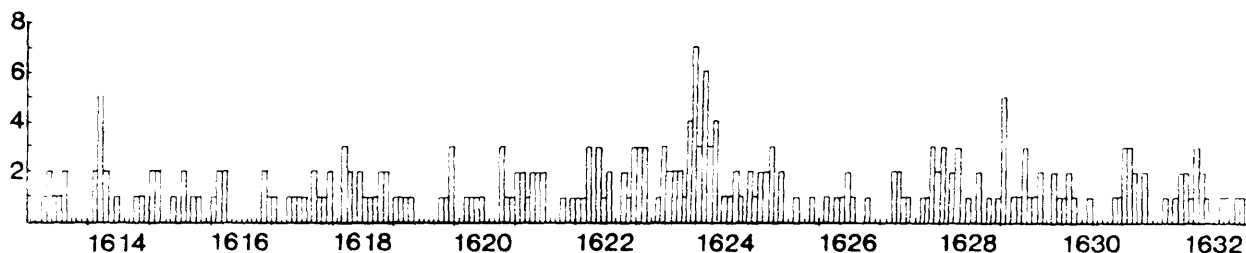


Fig. 10 : Monthly burials in Addingham, 1613-32.

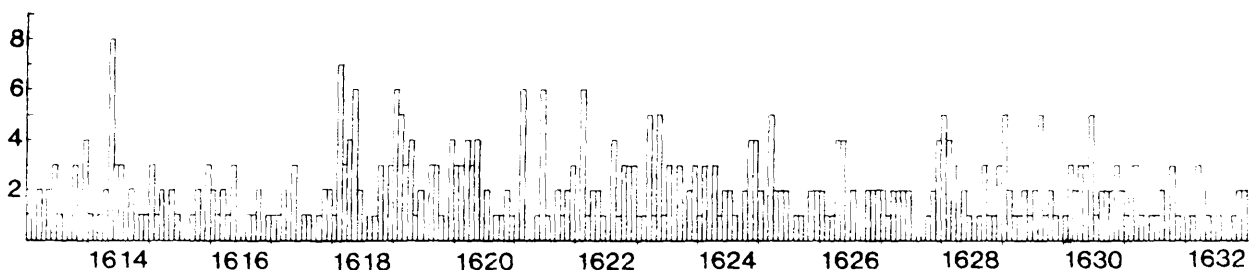


Fig. 11 : Monthly burials in Burnsall with Conistone, 1613-32.

The Otley register may be defective in that there are no burials recorded for a period of three months from December 1623 to February 1624 (fig. 8). The original Otley register has been examined and it was clear from the appearance of the document that it was a fair copy made up at intervals. There is therefore the possibility that some material was accidentally omitted. This makes it impossible to say anything about the winter of 1623-4 but it should be noted that the figures for January in both 1622 and 1623 were very high with fifteen and seventeen burials. The other peak noticeable in Otley was in July 1623 when there were fifteen burials. The January average for Otley over the twenty-year period studied was 5.2 and the July average 4.6 so these are undeniably crisis months, as was September 1623 with nine burials over an average of 3.1. The annual average number of burials in Otley over this same period was 52.4 so the figure of eighty-six for 1623 (which does not contain any entries for December) falls short of the 'double mortality' criterion of a crisis year. It is clear though that mortality was higher than normal and that a large proportion of this was due to the summer peaks.

In Ilkley there were thirty-seven burials in 1623, more than double the annual average here of 17.4; this is the only year in the twenty-year period when burials were twice the average (fig. 9). As the histogram shows, winter mortality in 1622-3 contributed almost nothing to this but there was high mortality throughout the summer months from April to October (with the exception of May). The two highest months were July and October with mortality five times the average.

In Addingham the annual average of burials was 12.8 and the 1623 figure of twenty-eight again represents a crisis level (fig. 10). It should be noted that the twenty-four burials in the following year are almost at crisis level so that Addingham parish suffered two consecutive years of high mortality. There was increased mortality in the summer of 1623 with a total of ten burials recorded for the period April to September, whereas the average for the twenty-year period was 4.7. However, the period of highest mortality in Addingham occurred between November 1623 and April 1624.

The average annual mortality of these six months taken together was 8.25 but in this particular period there were twenty-seven burials, more than three times the average. This is the only one of our parishes in which one can speak of a sustained period of high autumn and winter mortality.

Burnsall with Conistone in upper Wharfedale, in a sense the most remote of our parishes, had an average burial rate between 1613 and 1632 of 19.9 and had no years of double mortality (fig. 11). 1622 and 1623, with figures of twenty-seven and twenty-six, were higher than the average but there were similar peaks in 1618 (28) and 1619 (27). In 1623 the five burials in March and five in May were distinctly higher than usual and can be regarded as crisis months without, however, producing a crisis year.

To sum up, the individual parish figures show that two of our four parishes, Ilkley and Addingham, suffered crisis levels of mortality in 1623 and that Otley, the largest and most populous of the parishes, came close to crisis mortality. Each of these parishes however showed a different pattern of mortality in that year. In Otley there was both increased mortality in the winter of 1622-3 and possibly 1623-4 and summer peaks in July and September 1623. In Ilkley the mortality came in June, July and October of 1623 while Addingham experienced increased mortality in the summer of 1623 and also between November and April 1624. It is only in Addingham that one sees a period of high mortality building up over several months as in the histograms produced by Appleby for Cumbria and Millward for Stockport. Our other parishes had short-lived crisis periods of one or two months duration and the study of local mortality crises in **The Population History of England** shows that this is the more typical pattern of the country as a whole.

Famine or Disease?

We have no harvest evidence relating to Wharfedale alone, but it must be supposed that the dale shared in the general scarcity of 1621 to 1623. Contemporaries noted that the years 1621-3 were unusually wet nationwide, resulting in a very poor harvest in 1622 and subsequent famine in the early months of 1623. The harvests of 1618-20 were excellent but reports from the north of England received by the government between 1621 and 1623 referred to great distress among livestock farmers caused by recent crop failures and the reduction in the price of cattle and wool.¹¹

More specifically, there are various references to different areas of Yorkshire which suffered hardship. These came from Bulmer in the North Riding, Buckrose and Hull in the East Riding and from York where, in June 1622, the Mayor described the scarcity of corn as being 'greater than ever known in the memory of man'.¹² Thus it is clear that the 1621 harvest was very poor in Yorkshire and this was followed by another bad year in 1622. The Mayor and Burgesses of Ripon reported to the Privy Council in February 1623 that half the alehouses had been suppressed and the strength of beer moderated to help alleviate the scarcity of grain.¹³ However, for those who could afford it, supplies were evidently being brought into the country through the port of Hull which, although the surrounding countryside 'had not sufficient grain to sow the lands', was itself 'tolerably supplied with imported grain'.¹⁴ As Hoskins has observed, one bad harvest tends to generate another because of the scarcity of seed corn, so it is not surprising that there are numerous references to shortages in 1623 throughout the country. The very high price of wheat at Hull, 80s a quarter in February 1623, may be compared with the average annual price of 46s a

quarter in 1622 and 35s a quarter in 1623 quoted by Hoskins.¹⁵ The difference between this and the Hull price suggests that the scarcity was greater in the north than the south. Even though oats and maslin rather than wheat would have provided most of the breadcorn in Wharfedale it seems reasonable to assume that the shortage of grain in Yorkshire occasioned by two successive bad harvests also affected our area.

However, the wide differences in mortality between each parish suggest that the connection with the deficient harvests was not quite as immediate as might have been supposed and that the demographic effects which can be seen in the figures appear to be due to the interaction of several factors. The picture is rather more complex than appears from a simple consideration of yearly mortality.

It is difficult to ascertain whether or not harvest-year figures are significant. They are probably useful if a mortality crisis is related only to the food supply, but otherwise they seem of doubtful value. Neither Rogers nor Appleby give harvest-year figures. Millward's harvest-year figures show that although the harvest-year of 1622 showed an increase in mortality, the harvest-year of 1623 has much more serious consequences when mortality was nearly twice the average. The Wharfedale figures show that our area suffered more in the harvest-year of 1622 than in that of 1623 which is the reverse of Millward's findings for Stockport.

A significant drop in the number of baptisms has been regarded as one very important indicator of famine conditions. Rogers' study stresses this point and regards the decline in baptisms as being due to famine-induced amenorrhoea. However, Schofield suggests that increased foetal mortality associated with disease would also produce a drop in the number of baptisms.¹⁶ A strong argument against there being serious famine conditions in Wharfedale is that our baptism figures did not show anywhere near the severe drop of Millward's which in 1624 decreased by about a fifth, nor of Appleby's which declined in individual parishes by as much as a half in 1623, nor of Rogers' aggregate figures which showed a decline by over a third in 1623. Wharfedale has a slight decline (a twelfth) in 1624, which is followed by a surge in 1625 which almost compensates for the decline. 1626 and 1627 show even greater increases. Indeed it is these figures which seem more significant than the decline of 1624. Howson's pioneering work on Lancashire parish registers associates a steep rise in the number of baptisms after a mortality crisis with the effects of a plague epidemic which he believed he detected in Lancashire in 1623 when the deaths of husbandmen and tradesmen made opportunities for others and allowed the establishment of new households.¹⁷ It would seem however equally compatible with a period of relative scarcity when additions to a family might well prudently be postponed until the situation had eased. It seems significant that there was no increase in the marriage rate in Wharfedale after 1623.

Another indicator of famine conditions is an increase in 'economically marginal' deaths. Appleby is able to cite a number of these in the Greystoke register. There are no such direct references in the Wharfedale registers, but over the twenty-year period six pauper deaths are recorded in Ilkley; three of these occur in 1623. In Conistone and Burnsall the only two wanderers' deaths recorded are in 1622 and 1623 respectively and of the eleven paupers and vagrants buried in Otley during the twenty-year period, eight died between 1622 and 1626. It is sometimes considered that widows' deaths may be famine-related but the term 'widow' need not necessarily imply poverty. However in Otley there are twenty-nine recorded deaths of widows over the twenty-year period. Six of these occur in 1623 and apart from 1615 which

claimed five widows, the rest are scattered across the whole period. In Conistone and Burnsall there are sixteen widows' deaths recorded overall; eight of these occur in the three years 1622, 1623 and 1624.

Thus the evidence from Wharfedale relating to famine-induced mortality is confused. On the one hand the overall figures show some similarity in pattern, though not in degree, to the Stockport evidence and there may be some increases in economically marginal deaths. On the other hand, the pattern of winter mortality suggestive of famine is not found in all of our parishes. The drop in baptisms is so much less than in the other areas studied that one feels that there cannot have been a comparable degree of famine here. This being so, it is necessary to look at the Wharfedale figures for suggestions of epidemic disease.

Looking at the total mortality for all four parishes in 1623 one is struck by the high figure of twenty-six for July and the continuing high levels in that autumn. A superficial examination might suggest that there was an outbreak of some infectious disease which waned with the onset of winter.

However, as we have demonstrated, there is no consistent pattern across the four parishes in respect of concurrence of monthly peaks. The July peak is essentially accounted for by deaths in Otley and Ilkley. The same is true of the ratios of child to adult deaths within those peaks. For instance, Otley's January 1622 total consists of eight children to seven adults; but on January 1623 four children die to thirteen adults; in July six children to nine adults and in September two children to seven adults. In Ilkley in July and October 1623 the proportions were four children to two adults and two children to five adults. The proportions are equally erratic during Addingham's prolonged winter crisis. In Burnsall and Conistone in March and May 1623, as in distant Otley, fewer children died than adults.

As the most populous place in our area one might expect Otley to show increased vulnerability to infectious diseases.¹⁸ However, only a small proportion of the population of Otley parish lived in the market town of Otley. Parish register entries between 1605 and 1616 give each person's place of residence and in this period over two-thirds of the parish's mortality occurred in the eleven rural townships. When crisis months occurred during this period deaths were scattered and no one township suffered exclusively. With such a large area and so many townships this evidence suggests that an apparent peak might be best understood in terms of an accumulation of separate incidents rather than as an outbreak of any one infectious disease.

Nor are there any indications that several members of one family died within a short time span and in close geographical proximity; so even where deaths peak in summer and autumn, fall with the onset of winter and affect mostly adults (i.e. Otley parish), bubonic plague can be ruled out. We have found no reference in local registers to outbreaks of bubonic plague in Wharfedale, although Otley's clerk writes of plague in Birstall in October 1632 and neighbouring Harewood mentions it in connection with Wakefield in 1625.

Similarly Addingham's long winter crisis could perhaps be interpreted as an outbreak of typhus, but thirteen children died between November 1623 and April 1624 and typhus is said by both Rogers and Shrewsbury to be fatal to the elderly and to kill children only rarely.¹⁹

Typhoid fever is also rarely fatal in children, but is associated with hot weather and is spread by flies and contaminated water. Indeed the July mortality peak noticeable in mid-Wharfedale in 1623 could simply have resulted from infections associated with overcrowded insanitary living conditions; its timing and the predominance of adults among the victims suggest typhoid may have broken out. This, together with summer diarrhoea in infants and dysentery caused by the shigella bacillus which affects all age groups, could perhaps explain the summer deaths in Wharfedale. Other possibilities are scarlet fever and smallpox which can occur at any time of the year.

Increases in mortality in the winters after the bad harvests of 1621 and 1622 may be attributed to the 'normal' winter diseases in a population debilitated by poor nutrition and be thus in part attributable to the effects of food shortages. Diseases which have been rendered less dangerous in modern times could in these circumstances have caused severe mortality. The effects of influenza on a debilitated population were seen very clearly after the First World War. Similarly, measles would kill not only children but adults not rendered immune by exposure to a previous outbreak. Both these are associated particularly with the colder parts of the year, as are diphtheria and whooping cough which affected children in the main.

These infections may have been enough to account for the picture we have established, bearing in mind that they occurred alongside the 'normal' deaths from such things as congenital abnormalities, mental handicap, spasticity, epilepsy, childbirth and gynaecological problems, accidents and deterioration associated with age.

Economic and Agrarian Factors

Since we have no reason to argue that the harvests in Wharfedale were better than elsewhere in the North, can we suggest any factors which may have protected our area against the worst effects of the scarcity? It certainly cannot be argued that Wharfedale was a rich area agriculturally. Valuations from probate inventories only become available towards the end of the seventeenth century; these show that the Dales and Craven farmers had the lowest valuations of the eight Yorkshire regional groups.²⁰ Ryther's remarks of a century earlier are confirmed by the Wharfedale inventories. These show that pastoral activities accounted for approximately 95 per cent of farm valuations in Ilkley, Addingham and Burnsall and 80 per cent in Otley.²¹

Appleby's study pointed to the subdivision of holdings and the establishment of large numbers of cottagers with minute amounts of land as factors which exacerbated the effects of scarcity. Later evidence from Wharfedale shows that on the whole impartible inheritance was the custom here and this appears to have been a reason for migration out of the dale in the eighteenth century.²²

Some estate papers relating to the Middleton family property in Ilkley parish have survived and a list of rents exists for the Middleton estate dated 1626.²³ The tenancies were divided into three classes: husbandries (20), 'gressinges' (28) and cottages (17). Gressmen have been equated elsewhere with cottagers but this is clearly not the case here.²⁴ They appear to have been an intermediate class, paying rents substantially higher than the cottagers did and it is tempting to suggest that these farmers rented mainly pastureland and that even in difficult times they would have been able to obtain some income from sale of their livestock. This is

confirmed by Joan Thirsk who states that 'stock farmers and dairymen benefitted from a sustained demand for meat and other livestock products which caused prices to maintain a steadier level over the century as a whole'.²⁵

Sale of animals, of course, involves access to markets and a consideration of this shows that Wharfedale, although pastoral, was by no means as remote in the seventeenth century as might have been imagined. A network of routes over the moors and fells existed, connecting the Wharfedale villages with market towns in other dales. Today these are either partially incorporated into modern motor roads or remain as tracks for walkers (fig. 12).²⁶ The dales villages have never been isolated except in hard winters; indeed Hubberholme at the head of Wharfedale was on the direct 'highway' between Lancaster and Newcastle. Some of these fell routes, such as the track from Ilkley southwards over the moors to Bingley and Baildon, are more direct than the modern roads which tend to follow the valleys. The importance of these routes at this time is demonstrated by an analysis of four registers' marriage horizons. This shows that marriage links, apart from the immediate vicinity, were

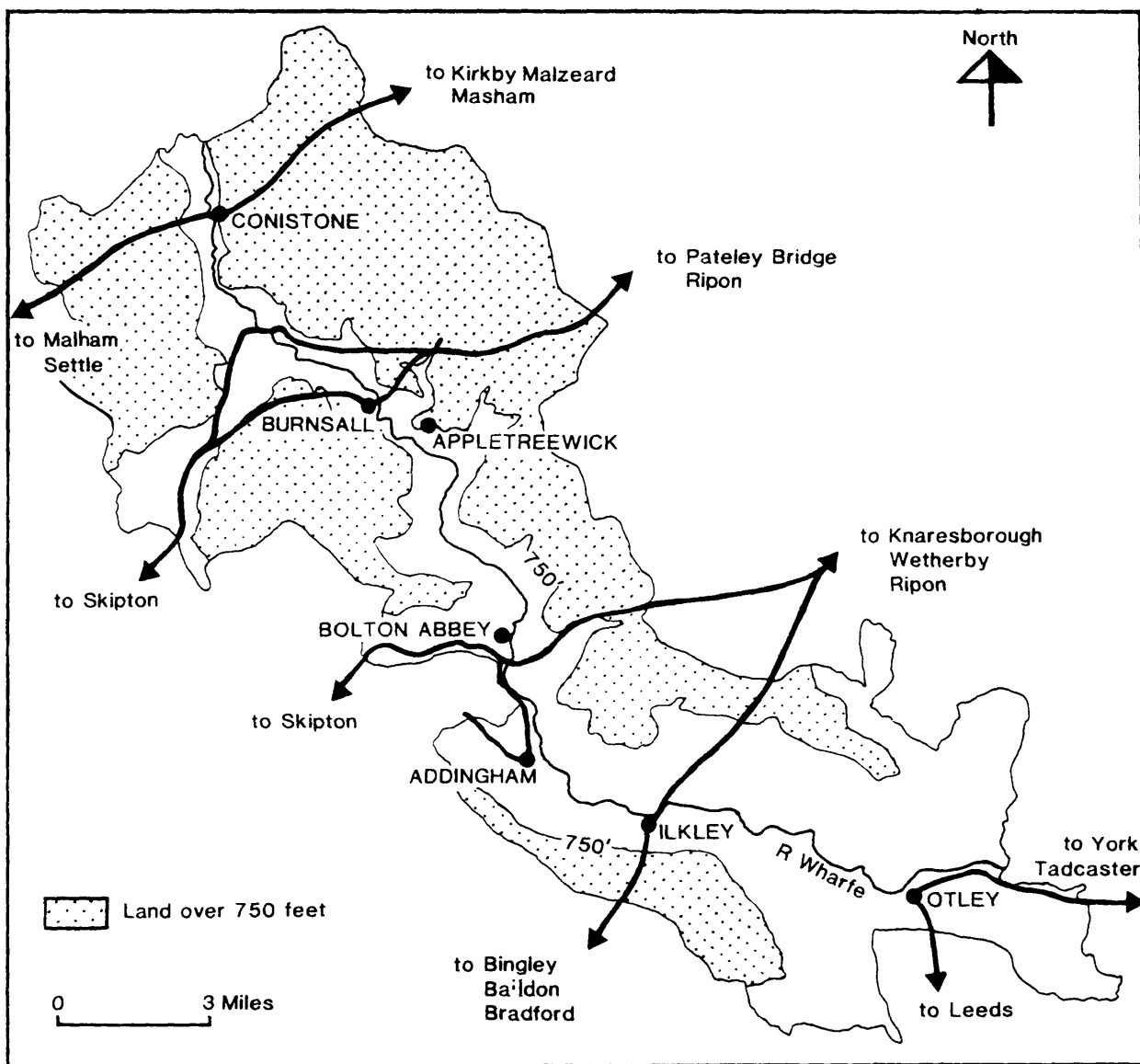


Fig. 12 : Market routes from mid-Wharfedale.

often with the larger market towns or the village over the hill.²⁷ This is particularly true of Burnsall and Linton (the parish which lies between the 'arms' of Burnsall and Conistone) where there were more links with Kirkby Malham and Kirkby Malzeard, Pateley Bridge and Ripon than with any of the places lower down Wharfedale.

Burnsall and Conistone were thus exceptionally well placed in regard to access to markets and this may well be of importance in considering why it was that Burnsall seems so little affected by the crisis of 1623. This parish had the lowest increase in mortality of our four parishes, even though it lay at the highest altitude; **The Population History of England** points to altitude as one factor which increases the risk of crisis mortality. There is the possibility that environmental conditions were a little different here from those lower down Wharfedale, as Burnsall lies just inside the limestone area where the land drains very freely.

Pastoral farming was the main activity in Burnsall as elsewhere in the dale and there is evidence that the freeholders and tenants in Burnsall were able to safeguard their rights to common land at the end of the sixteenth century.²⁸

The inhabitants had also another possible source of income in leadmining. The great expansion of the lead mines came later on but there was some activity in the early seventeenth century and it is known that the system of marking out individual claims called 'meres' began about this time. An illustration of the dual economy is given by the will of John Younge of Appletreewick (1617) which reads: 'the residue of my lead and also my corn and hay I give to my uncle Thomas Preston'.²⁹ Appletreewick also had an annual fair which appears to have flourished during the seventeenth century.

The generosity of local benefactors may also have helped the parish. Sir William Craven, Merchant Taylor and native of Appletreewick, became Lord Mayor of London in 1612. He repaired the old bridge at Burnsall, repaired and decorated Burnsall church, having previously established a free school in 1602. Roger Dodsworth, the Yorkshire antiquary, visited Burnsall parish in 1622 and was impressed by the concern for the improvement of local conditions which had been shown by Sir William.³⁰

Thus it seems likely that local circumstances in Burnsall combined to ward off the effects of bad harvests. It is known that dual economies which depended upon woollen textiles suffered very badly in these years because their market collapsed as is shown by Drake's study, but it may be that the market for lead was more stable. Joan Thirsk writes that where secondary industrial activities were carried on alongside farming, the people were better placed to maintain their income and that this pattern was 'an integral part of the pastoral way of life'; she gives as examples flax and hemp growing and weaving, mining and metalworking among others.³¹

Conclusion

The results of our study have shown that Wharfedale's demographic experience during these critical years was conspicuously different from that of other parish communities which had been studied in the north and west of England. We have indicated that to some extent the below average frequency of crisis years experienced here could have been linked to specific characteristics of individual communities as, for example, Burnsall's lead-mining activity. However, over and above these local

factors there are regional circumstances implicit in Wharfedale's geographical location which may have played a part in diminishing the worst effects of famine and disease.

It is now known that a genuinely determining factor in the incidence of crisis mortality is density of settlement.³² By contrast Wharfedale's settlement pattern as already indicated was widespread and diverse. Not only are the Wharfedale parishes of an above average size (Burnsall 20,666 acres, Addingham 3203 acres, Ilkley 8401 acres, Otley 21,165 acres) but neither are the communities within them densely settled in a single settlement. Approximately two thirds of the population lived in the villages with the remainder in isolated farmsteads and small hamlets situated on the periphery of the settlement area. Under these conditions parish populations would have been least exposed to the spread of infectious disease.

Yet despite these militating factors against the worst effects of famine and sickness Wharfedale's population history during the period reviewed here was far from stable. It is therefore instructive to consider population trends for the entire period 1613 to 1632 (Table 1). The figures in Table 1 show that the rate of growth was declining throughout the period, the decline being most marked between 1622 and 1627. This can be attributed to several factors. First, burials were rising faster than baptisms during the period marked by the dates 1613 to 1627; after 1627 when there was a reversal of trends, baptisms were falling faster than burials (Table 2). At the same time the number of marriages declined throughout the period. This decline was clearly evident before the crisis year of 1623. The fall in marriages may be due to a rise in the age of first marriage, a lower proportion of the population ever-marrying or, alternatively, to emigration.

Table 1. Growth rates in four mid-Wharfedale parishes by quinquennium

Date	Baptisms N	Burials N	Natural inc. or dec.	% Growth rate
1613-7	646	461	+ 185	28.64
1618-22	675	506	+ 169	25.04
1623-7	706	573	+ 133	18.84
1626-32	588	508	+ 80	13.60

Table 2. mid-Wharfedale baptisms, burials and marriages, percentage increase or decrease by quinquennium

Date	Baptisms N	% inc. or dec.	Burials N	% inc. or dec.	Marriages N	% inc. or dec.
1613-7	646	—	461	—	177	—
1618-22	675	+ 4.5	506	+ 9.8	157	- 11.3
1623-7	706	+ 4.6	573	+ 13.2	152	- 3.2
1628-32	588	- 16.7	508	- 11.3	142	- 6.6

Overall, we may say that Wharfedale in the period selected for study experienced a general malaise in which the poor harvests of 1621 and 1622 were just one episode though possibly a very important one. All the evidence seems to suggest that the balance between sufficiency and dearth in many parts of the dale was finely poised. Local factors may have protected the area from the severest effects of the general northern mortality crisis of 1623. At the same time Wharfedale was liable to minor crises and experienced an above average death rate, as well as a falling-off in birth and marriage rates and possibly movement out of the valley.

We are conscious that because of the nature of our material and limitations of time our work has produced far more questions than answers but we hope that it has shown the complexity which can be concealed behind similar overall annual mortality figures and also illustrated the uses of a small local study.

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NOTES

1. Class members: José Bosworth, Wendy Childs, Kathleen Edwards, Mary Hall, Pat Hudson, Maureen Johnson, Bessie Maltby, Kate Mason, Elizabeth Smith and Hugh Steele-Smith.
Tutors: Moira Long and May Pickles.
The work was done over two terms, mainly in class time, using photocopies of printed registers.
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